

CLAIMS**We claim:**

1. A gait monitoring for monitoring gait characteristics of a subject, said system comprising:
 - a sensor module that detects floor acceleration, vibration, and/or deflection to provide acceleration, vibration, and/or deflection signal; and
 - a processor module that analyzes the acceleration, vibration, and/or deflection signal for determining gait characteristics.
- 10 2. The system of claim 1, further comprising:
 - an output module for receiving said gait characteristics data.
- 15 3. The system of claim 2, wherein said output module comprises at least one of display, alarm, memory storage, communication device, printer, buzzer, PDA, lap top computer, computer, audio or visual alarm, and/or light.
- 20 4. The system of claim 3, wherein said communication device comprises at least one of modem, pager, network interface, Ethernet card, serial communications port, parallel communications port, telephone, and/or PCMCIA slot and card.
5. The system of claim 1, wherein said sensor module and processor module are in wireless communication.
- 25 6. The system of claim 5, wherein said wireless communication comprises at least one of RF link, an infrared, cellular phone link, optical and/or electromagenetic.
7. The system of claim 1, wherein said sensor module and processor module are in a hard wired communication.
- 30 8. The system of claim 7, wherein said hard wired communication comprises at

least one electronic, integrated circuit, electromagnetic, wire, cable, fiber optics, a phone line, twisted pair, and/or coaxial.

9. The system of claim 1, further comprising:
5 a rate-of-travel detector to determine the rate of travel of the subject.

10. The system of claim 9, wherein said rate-of-travel detector comprises at least one of a plurality of beam breaks, floor switches, and/or door switches.

10 11. The system of claim 9, wherein said rate-of-travel detector comprises at least one of ultrasonic communication, IR communication, laser communication, ground radar communication, wide band radar communication, and/or doppler communication.

15 12. The system of claim 9, said gait characteristics of the subject includes at least one of step count, pace, normal condition, limp, shuffle, falls, average walking velocity, step length, and/or stride length.

13. The system of claim 1, said gait characteristics of the subject includes at least one of step count, pace, normal condition, limp, shuffle, and/or falls.

20 14. The system of claim 1, said gait characteristics of the subject includes falls.

15. The system of claim 1, further comprising archival storage module.

25 16. The system of claim 15, wherein said archival storage module stores at least one of longitudinal analysis of gait characteristics, pattern recognition, and/or identification determination.

30 17. The system of claim 16, wherein said processor module analyzes the gait characteristics, pattern recognition, and/or identification determination data.

18. The system of claim 1, further comprising:
a second processor module, said second processor module analyzes the gait
characteristics, pattern recognition, and/or identification determination data.

5 19. The system of claim 1, wherein said subject is a human and/or animal.

20. The system of claim 1, wherein said subject is an animate or inanimate object.

10 21. The system of claim 1, further comprising fall module that processes data
received from said acceleration, vibration, and/or deflection module.

22. The system of claim 1, further comprising step module that processes data
received from said acceleration, vibration, and/or deflection module.

15 23. The system of claim 1, further comprising:
a second processor module in communication with said system.

24. A method for monitoring gait characteristics of a subject, said method
comprising:

20 detecting floor acceleration, vibration, and/or deflection to provide acceleration,
vibration, and/or deflection signal; and

analyzing the acceleration, vibration, and/or deflection signal for determining gait
characteristics.

25 25. The method of claim 24, further comprising:
outputting said gait characteristics data.

26. The method of claim 25, wherein said outputting is provided by an output
module that comprises at least one of display, alarm, memory storage, communication device,
30 printer, buzzer, PDA, lap top computer, computer, audio or visual alarm, and/or light.

27. The method of claim 26, wherein said communication device comprises at least one of modem, pager, network interface, Ethernet card, serial communications port, parallel communications port, telephone, and/or PCMCIA slot and card.

5 28. The method of claim 24, further comprising:
detecting rate-of-travel of the subject to determine the rate of travel of the subject.

29. The method of claim 28, wherein detecting said rate of travel is provided by a rate rate-of-travel detector.

10 30. The method of claim 28, wherein said rate-of-travel detector comprises at least one of ultrasonic communication, IR communication, laser communication, ground radar communication, wide band radar communication, and/or doppler communication.

15 31. The method of claim 28, said gait characteristics of the subject includes at least one of step count, pace, normal condition, limp, shuffle, falls, average walking velocity, step length, and/or stride length.

20 32. The method of claim 24, said gait characteristics of the subject includes at least one of step count, pace, normal condition, limp, shuffle, and/or falls.

33. The method of claim 24, said gait characteristics of the subject includes falls.

25 34. The method of claim 24, further comprising:
storing archival information or data.

35. The method of claim 34, wherein the storing of archival information or data is provided by an archival storage module that stores at least one of longitudinal analysis of gait characteristics, pattern recognition, and/or identification determination.

30 36. The method of claim 35, further comprising:

analyzing the gait characteristics, pattern recognition, and/or identification determination data.

37. The method of claim 24, wherein said subject is a human and/or animal.

5

38. The method of claim 24, wherein said subject is an animate or inanimate object.

39. The method of claim 24, further comprising:

10 analyzing fall data received from the acceleration, vibration, and/or deflection signal.

40. The method of claim 24, further comprising:

analyzing step data from the acceleration, vibration, and/or deflection signal.

15 41. A computer program product comprising computer usable medium having computer logic for enabling at least one processor in a computer system to monitor gait characteristics of a subject, said computer logic comprising:

detecting floor acceleration, vibration, and/or deflection to provide acceleration, vibration, and/or deflection signal; and

20 analyzing the acceleration, vibration, and/or deflection signal for determining gait characteristics.